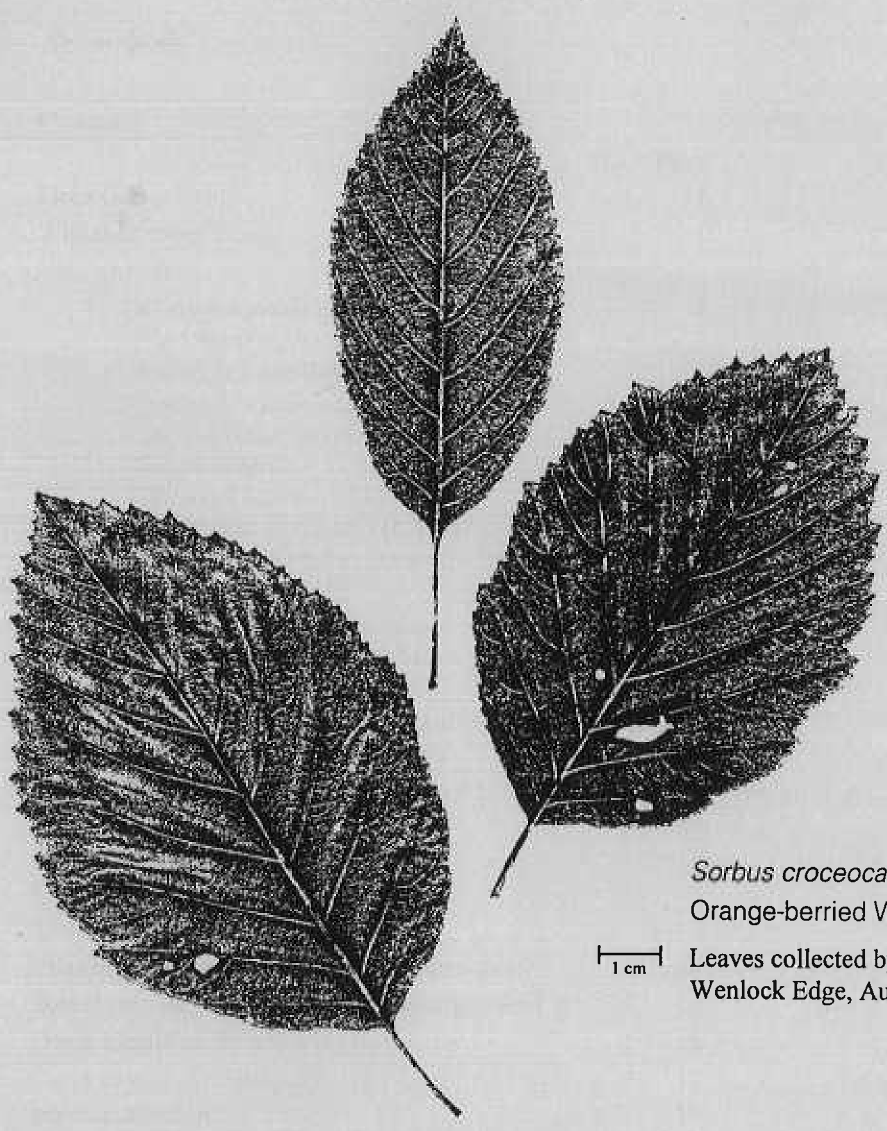
Shropshire Flora Group

Newsletter

Autumn 1997



Sorbus croceocarpa P.D.Sell
Orange-berried Whitebeam

1 cm

Leaves collected by Ruth Dawes on
Wenlock Edge, August 1997.

The Old River Bed in Shrewsbury
Juncus foliosus Desf. - newly recorded in VC40
Au revoir to John Packham
The Border Bryologists

* * *

In association with the Shropshire Wildlife Trust
and the Botanical Society of the British Isles

The Shropshire Flora Group is supported by
The Leighton Committee of the Shropshire Wildlife Trust
and English Nature

Shropshire Flora Group
Newsletter No. 5
Autumn 1997

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This newsletter is produced by the Shropshire Flora Group
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Data & maps produced using Recorder *Shropshire Flora* and DMap for Windows v 6.3b, the latter generously donated by Dr Alan Morton.

Dear Recorder...

Sarah Whild

Newsletter

I hope you enjoy reading this edition of the newsletter, which departs from tradition by including some new subject matter. We have reproduced an article by David Pannett on the geomorphology of the Old River Bed in Shrewsbury, as an introduction to this fascinating site. We also have a contribution from Mark Lawley of extracts from his entertaining accounts of the Border Bryologists, which were originally published by the British Bryological Society. The newsletter is produced twice a year, and we welcome contributions. If anyone would like to contribute, please feel free to call me and discuss your ideas.

Leighton Committee

It is sad to report that this year John Packham retired from his role as Chairman of the Leighton Committee. John was Executive Editor of the *Ecological Flora* and has chaired the Leighton Committee since then, overseeing the Flora Updating Project - ie. the Flora Group.

Until a few years ago John was Professor of Plant Ecology at the University of Wolverhampton, where he has now been succeeded by Ian Trueman. As one of the country's leading experts, he has written a number of books on woodland ecology, including *Ecology of Woodland Processes*, with David Harding, and the definitive accounts of Wood Sorrel, *Oxalis acetosa*, and Yellow Archangel, *Lamiastrum galeobdolon*, in the Journal of Ecology. Among his more interesting finds to date are the rediscovery of Wilson's Filmy-fern, *Hymenophyllum wilsonii*, on the Long Mynd in 1973 and the first record for Stag's-horn Clubmoss, *Lycopodium clavatum*, on the Ercall. His paper *Wood Sorrel on the Long Mynd* (published by the Caradoc & Severn Valley Field Club in 1979) is still available from the Field Studies Council.

I think many people may have overlooked John's quiet but often decisive involvement in the more scientific activities of the Shropshire Wildlife Trust over the years. His academic expertise will be sorely missed from the world of conservation. On behalf of the Flora Group I would like to thank him for all the knowledge and support he has given us, and wish him a long and enjoyable retirement - if retirement you can call it. Among his current activities, I happen to know, is the organisation of a major conference on coastal shingle ecology in 1999, and he has promised to do some teaching for us at The University of Birmingham in the next year or two.

Ian Trueman has succeeded John as the Chair of the Leighton Committee, and Alex Lockton has been appointed onto the committee to fill the vacancy.

BSBI conference

I attended the BSBI Recorders conference at Lancaster in September, where the main topics on the agenda included discussions on the progress towards Atlas 2000, the production of a new Plant Crib and several plant identification workshops. There was also a splendid field trip to some limestone pavement to see species which we will never record in Shropshire, including Dark-red Helleborine, *Epipactis atrorubens*, and Rigid Buckler Fern, *Dryopteris submontana*.

Winter Meeting

You are invited to our winter meeting, which this year will be held on:

Saturday 6 December 1997 at 2pm at Preston Montford Field Centre
~ RSVP ~

Our guest speaker is Jonathan Briggs, conservation officer for British Waters and also the co-ordinator of the National Mistletoe Survey. Following on from our aquatic topics of recent years, he will be talking about the conservation of the Montgomery Canal, but I dare say he may be drawn about other matters of interest.

Also on the agenda is progress with the *Atlas 2000* project, which Ian Trueman will be reporting on, and planning our events and field meetings for next year.

Records please...

Please could everyone bring their records to the meeting, or send them to me in advance if you want to have this year's efforts included in the maps of progress to date. In the Flora Group we operate a two-tier system whereby you can either join by subscription or by collecting records. At the moment our mailing list is very long, so I would appreciate at least a note from all our recording members or - even better - lots of interesting new records. If you have specimens, you can bring them to the meeting for confirmation.

Records

Sarah Whild & Alex Lockton

(Where voucher specimens have been retained, the herbarium is listed in bold. Important specimens are kept at the herbarium of the Shropshire Biological Records Centre at Ludlow Museum, **SBRC**, or the Flora Group, **SFG**).

First vice-county Records

Alyssum saxatile L. **Golden Alyssum**. For some strange reason, this common garden plant has never been recorded in the county before. On April 3rd Rob Stokes found some growing at the base of a wall and on the roadside at Cressage, SJ5904, where it had presumably escaped from a nearby garden. **Herb. SBRC.**

Cardamine raphanifolia Pourret, **Greater Cuckooflower**, was found in some abundance on a streamside in woodland at Dudmaston (SO7488) on 10 May 1997 by Tom Preece. This handsome plant is rather like the common Cuckooflower, *Cardamine pratensis*, but is slightly larger and with bright purple flowers. It comes from southern Europe and is naturalised in several places in Britain, but has never been recorded in Shropshire before. **Herb. SBRC.**

Juncus foliosus Desf., **Leafy Rush**, is a species closely allied to **Toad Rush**, *Juncus bufonius* L. They are often not distinguished, but lumped together as *Juncus bufonius* L. agg. However, the two have been separated for many years, and are clearly listed as such in Stace's *New Flora of the British Isles* (both editions), so there really is no reason not to record them, especially in flower or fruit. *J. foliosus* has dark lines on either side of the midrib of the tepals (use a hand lens) and wider leaves. I found this species on the Stiperstones, in a flush on the eastern slope near Gatten Plantation (SO3698), in July this year, and this appears to be a first county record (SJW det. C.A. Stace, **herb. SFG**).

Once you have learned a new plant, it seems to crop up everywhere: *Juncus foliosus* Desf. Brown Moss. SJ562393. S.J.Whild. 1 August 1997. On the margins of the main pool. 2nd VC record. **Herb. SBRC.**

Rare Plants

Dorothy Young found *Campanula patula* L., **Spreading Bellflower**, in a new hectad for the post-Flora period. A single plant was seen on a roadside near Llanfair Waterdine, in SO27, not far from a location where it was last reported by Will Prestwood in 1980. This is a welcome new dot for the Atlas 2000 project of a Nationally Scarce plant that seems very close to extinction in Shropshire, having apparently declined to just three other sites in recent years, all of which are in SO37.

Carex divulsa Stokes ssp. *divulsa*, **Grey Sedge**, is a very uncommon plant in Shropshire. It is known to occur in the Wyre Forest, but this year Rob Stokes found it growing by a track in Badger Dingle (SO7699). There are a number of old sites for it, but these two are the only places where it is currently known. **Herb. SFG.**

Julie Edwards found a very significant quantity of **Cowbane**, *Cicuta virosa* L., which is Nationally Scarce, but fairly widespread in north Shropshire. It was growing in a marl pit on her family's farm (SJ6134) in much greater quantities than I have ever seen it before - at least 100 plants. This is another new tetrad for a species which currently has 11 dots on the county map, but seems to have disappeared from many of its former sites. It occupies a fairly precarious niche in the succession from open water to woodland. This tetrad was one of three with no records whatsoever in Sinker's Flora, and it is mostly arable desert, but it is rather interesting what turns up when someone knows the area well.

Charles Sinker originally found *Circaea* x *intermedia* Ehrh., **Upland Enchanter's-nightshade**, in the 1960s at Earl's Hill, where it grows in the woodland along the Habberley Brook. In the *Ecological Flora* he describes at "several localities down stream as far as Hinton". This is its only known site in Shropshire, except that it was once found at Meole Brace, where it may well have been washed down-river in a storm. But it seems likely that the Earl's Hill population itself may have originated further upstream, as this species was found this year along a stream on the Stiperstones - a tributary of the Habberley Brook (SJ30, SJW). Only a small number of plants remain, however - nothing like the quantity to be found at Earl's Hill. **Herb. SFG.**

Preenshead Wood is a little-known area of ancient woodland along the Severn south of Coalport. Following a request by the Severn Gorge Trust - who own the wood - we went to confirm an old record of Wild Service Tree, *Sorbus torminalis*. We can report that it is still there and thriving, but even more interesting was the discovery of **Wood Barley**, *Hordelymus europaeus* (L.) Jessen. This is a new tetrad for a Nationally Scarce species (SJ60W, AJL & SJW, **herb. SFG**).

I suspect the **Grey Club-rush**, *Schoenoplectus tabernaemontani* (C.Gmelin) Palla, is commoner in the county than we know. It is easy to overlook and often grows in the same place as its larger relative, Common Club-rush, *S. lacustris* (L.) Palla. I say larger because it generally tends to be, but you can sometimes find very large specimens of *tabernaemontani*, and the only sure way to tell the difference is to look closely at the flowers. A new find for this species is at a farm pond not far from Market Drayton (SJ6033), where it was collected by

Julie Edwards in July this year (det. Chris Walker, **herb. SFG**). That brings the total number of current sites in the county to three, with White Mere and a farm pond near Harmer Hill being the other two. Personally, I think the rivers are worth investigating for this species, but there is only one such record to date, from the Meese in SJ72, which is by 'Trina Paskell and dates from 1981.

Aliens

Mary Fuller found **Three-cornered Garlic**, *Allium triquetrum* L., growing in her garden in Oswestry this summer. This plant is introduced to the British Isles and typically occurs on roadsides in the south, most commonly in Cornwall.

It is important to use the key in Stace's *Flora* to identify the various *Alliums*, as there are a number of similar-looking species. It is worth collecting a specimen if there is any doubt about the identification. This species is shown in Sinker's *Flora* (p 290) as present at four locations in the county. It has been recorded on roadsides at Church Stretton (SO49, Helen Davidson) and Farley Dingle (SJ60, Sir Paul Benthall) in 1977, but it seems likely that the two records given for SO38 by T.E.Mitchell, also in 1977, were errors for Few-flowered Garlic, *A. paradoxum* (M.Bieb.), which was later found in these localities by Joyce Warren (conf. Ian Trueman). Mary's plants in Oswestry had apparently sprung up of their own accord, possibly from introduced topsoil.

Narrow-leaved Pepperwort, *Lepidium ruderale* L., is an alien species that was first recorded in Shropshire by Richard de Gylpyn Benson in 1904, at "Vale Castle". I don't know precisely where that is, but it could be near Vales Wood, SJ3920. It has subsequently been found only twice before this year, at Benthall (SJ60, George Potts, 1919) and in Oswestry (SJ22) where it was found by Elizabeth Roberts (conf. P.M.Benoit) in 1989. This year I noticed a large patch of it on the roadside at Shelton, Shrewsbury (SJ41, SJW conf. F.H.Perring, **herb. SFG**) so it could be on the increase, and is worth being aware of.

Sorbus croceocarpa P.D.Sell was found by Ruth Dawes in three locations on Wenlock Edge. This species is thought to be a hybrid between the native Wild Service Tree, *Sorbus torminalis* (L.) Crantz, and the introduced Whitebeam, *Sorbus aria* (L.) Crantz. It has ovate, finely-toothed leaves and produces bright orange berries in the autumn, hence its vernacular name **Orange-berried Whitebeam**. Specimens were identified by P.J.M. Nethercott, the BSBI referee for *Sorbus*. This tree, although widely planted throughout Britain, has previously been found naturalised in Shropshire only in a few locations in Telford, firstly by Franklyn Perring in 1974 and later by W.E.Wiggins in 1985. I shall bring specimens to the winter meeting and then forward them to **herb. SBRC** (see front cover for illustration).

Other interesting species

I was pleased that Francesca Griffith, the Sites Manager for the Shropshire Wildlife Trust, found **Bog Rosemary**, *Andromeda polifolia* L., at Steel Heath (SJ53) this year. This is welcome confirmation of a find by Alison Carter in 1988, showing that this rarity is still present in three of its four known sites in the county. If it is not seen at Clarepool Moss again soon, this species will qualify for inclusion in the rare plants list.

Another interesting rediscovery was of **Oak Fern**, *Gymnocarpium dryopteris* (L.) Newman, on the east side of the Stiperstones, where it was formerly recorded by William Phillips in 1893 and Richard de Gylpyn Benson in 1895. The precise location was unknown, but I happened across a tiny population this summer that might well be in the same site. My apologies for not providing precise details of the locality, but this is one of the few plant species in the county which are probably more vulnerable to collectors than to neglect. The landowner has been informed and is keen to ensure its conservation.

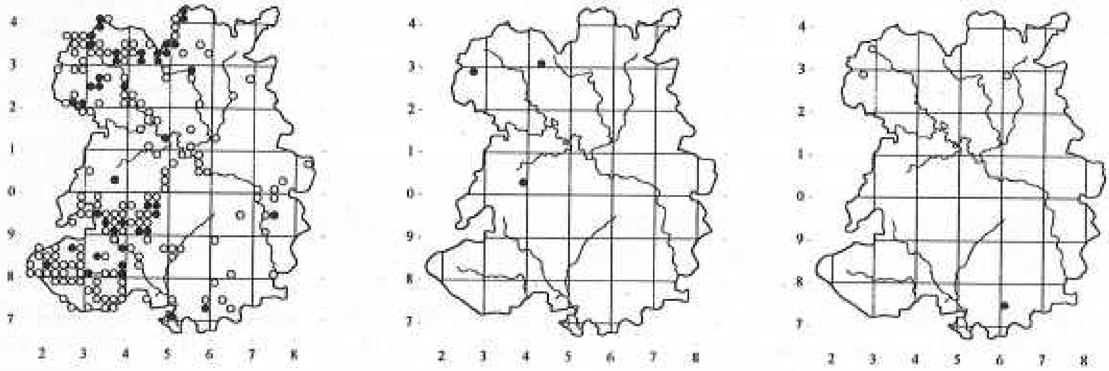
I don't know how rare **Fat Duckweed**, *Lemna gibba* L., is. It can be very distinctive - unlike other duckweeds, it has a protuberant 'underbelly' that you can't possibly mistake. However, it may be under-recorded as this feature tends to disappear in the autumn and there are even thought to be forms in which the swollen thallus is not evident at all throughout the year. It is on the edge of its range in Shropshire, being more frequent in the south-east of Britain. It is typical of more stagnant, eutrophic water bodies. The oldest record that we have details of was by Edward Rutter in 1955, but it is listed in Lloyd & Rutter's *Handlist* (1957) as having been recorded in two other locations. Since then it has been recorded in very few sites, and the records for it all along the Severn, listed in Sinker's *Flora*, have never been repeated. I had never seen it in the county before, but was delighted when it turned up in just the right sort of habitat at Monkmoor Sewage Works, which is a Wildlife Trust Reserve (SJ5113, SJW, 1997).

If the rediscovery of a 100 year-old find is interesting, a letter from Geoffrey Ransome, who is a member of the Ludlow Branch of the Wildlife Trust, reporting a large patch of **Yellow Mountain Pansy**, *Viola lutea* Hudson, on Titterstone Clee (SO57) this year, was even more exciting. It has not been recorded there in the 156 years since Leighton's *Flora* was published, when it was noted by Joseph Babington, Henry Spare and Joseph Baly (all independently). This plant is not yet rare in the county, although it has declined considerably as a result of agricultural "improvement" of upland meadows and pastures. Titterstone Clee is the only site in the eastern half of the county where it is currently known.

It has come to my attention that our records of the various **Monkeyflowers**, *Mimulus* L. spp., are not all they should be. I am indebted to Clive Stace for pointing out the error of our ways, and I would urge all potential *Mimulus* recorders to consult his *Flora* before submitting any more records.

It seems there are as many as eight species, varieties and hybrids of this genus in Britain, all of which are introduced and naturalised (to varying extents) in damp places and streamsides. Four taxa are listed in Sinker's *Flora*: *M. moschatus* Douglas ex Lindl. (**Musk**), *M. guttatus* DC. (**Monkeyflower**), *M. luteus* L. (**Blood-drop-emlets**) and *M.* x *robertsii* Silverside (**Hybrid Monkeyflower**). Unfortunately it seems that most, if not all, of our records of *M. luteus* should actually be of *M.* x *robertsii*, as the former is not known to occur this far south. All plants recorded in upland areas should be checked for large red blotches on the petals and "abundant stalked glands or simple hairs" on the calyx. This is the hybrid, and I suspect that it is actually the commoner plant in all upland locations, although we have only two confirmed records for it in the county.

To compound this problem, there are many old records for *M. luteus* in the county, but these were all changed to *M. guttatus* in Sinker's *Flora*. I don't know if there are specimens of any of these records, but it would be enormously helpful if some do turn up in the various herbaria. In the meantime, I would appreciate it if recorders could check their local patches, although you will probably have to wait until next summer now: *M.* x *robertsii* is still in flower (Sept. 17th) but the *M. guttatus* was over long ago.



Above: distribution maps of *M. guttatus* (left), *M.* x *robertsii* (centre) & *M. luteus* (right) in Shropshire, as they are currently recorded. *M.* x *robertsii* is probably under-recorded for the other two, and cultivated plants of *M.* x *hybridus* have not yet been recorded at all.

Roadside Verges

Rob Pinsent, Shropshire County Council

Many of you will remember Liz Radford's article in the last edition of the Shropshire Flora Group Newsletter outlining the County Council's Roadside Verge initiative. Although Liz has now left us I am pleased to be able to report that the verge initiative is progressing well with over 80 sites now on our records. We are also just putting the finishing touches to a leaflet which we hope will encourage members of the public to take an interest in their local verges and send us records.

A roadside verge that I suspect most of you know of is the impressive example of calcareous grassland at Pant with its excellent display of orchids. Sadly, many of you may also be aware that over the last few years the floristic interest of this site has been declining due to the ingress of woody shrubs and course grasses.

The County Council is taking this decline very seriously and we are working closely with The Flora Group, The Shropshire Wildlife Trust and the local Parish Council to try and return the verge to its former glory. We have just produced a draft of a management plan which sets out our proposals to maintain and enhance this habitat.

The plan involves all woody shrubs being removed from the site which will then be mown once a year (after the plants have set seed). We propose varying the time of mowing with cuts taking place in July for two years and then a cut in September in the third year. We are hopeful that the late cut will allow any remaining Autumn Ladies Tresses *Spiranthes spiralis* time to seed. The Wildlife Trust has undertaken to carry out the practical management and the Flora Group has kindly offered to monitor the results.

I hope you will all agree with me that this is a very positive step forward in the protection of the wonderful habitat at Pant. I addition I am hopeful that our combined efforts in the future will make it possible to protect other interesting verge sites throughout Shropshire.

Mosses & Liverworts

Mark Lawley reports on the activities of the Border Bryologists...

1994. Little did Roy Perry foresee his fate when he drew our attention to the world of mosses and liverworts with a winter talk in 1992, followed by a meeting in the field. So popular has the subject - and Roy's enthusiasm - proved that he led us on seven forays in 1994 alone. Botanists of all abilities have profited from these meetings, including several from Shropshire who lack the equivalent forum in their own county. We benignly tolerate these fellow foragers - the lost souls of Shropshire - on our outings, not only because we freely trespass onto their territory, but also because one of the chief delights of our society is to meet naturalists from neighbouring districts in the convivial atmosphere of a day in the field, as we ramble the hilly brakes in search and discussion of common interests.

On November 6th we sampled very different habitats at two Shropshire Wildlife Trust reserves: first at Knowle Wood on the limestone band to the south of Titterstone Clee, and after lunch at Cramer Gutter, renowned for its *Gentiana pneumonanthe*, but on this occasion sporting *Sphagnum compactum* and a very small, rather rare leafy liverwort known to its select circle of friends as *Cladopodiella fluitans*. Knowle Wood offered a varied but unremarkable selection of woodland species (we never actually got as far as the limestone), including a fine mat of *Radula complanata* rippling down a tree-trunk like a lava flow, and fine specimens of *Bryum flaccidum*, a species allied to (and probably often overlooked in error for) *Bryum capillare*, but distinguishable by its finger-like gemmae projecting from the axils of its leaves. *B. flaccidum* seems to be a feature of the epiphytic community on elder trees in several localities in our area, and not as uncommon as formerly supposed.

November 26th found us in Hough's Coppice on the west side of Caer Caradoc near Church Stretton. We noted no exceptional species, although *Porella cordeana* on a boulder in the stream and *Amblystegium tenax* nearby were new to many of the party. A post-prandial stroll into the lower reaches of Ashes Hollow on the Long Mynd produced species typical of the Mynd's rough pastures and rocky outcrops. We did not penetrate far enough up the valley to reach the wet flushes where we might have met with *Bryum weigelii*, a rare species distinguished by its delicate pinkish-brown hue and markedly decurrent leaf-bases, which we had found the previous year at Boiling Well at the top of Ashes Hollow. But perhaps the excellent draught beer at the Green Dragon had dimmed our powers of detection on this our second visit to the valley.

1995. It has come to our attention, as one's old headmaster might have said (had he been a bryologist) that God created mosses and liverworts to keep botanists from idleness during the winter months. As vascular plants slumber underground, bryophytes look their brightest and best, thriving in our mild, moist Atlantic winters, particularly near the western seaboard and in the hills, where water from the ocean dampens the air and ground, protecting these sensitive little plants from the dry heat and cold to which they are susceptible. In consequence, Britain has two thirds of Europe's bryoflora, compared with less than a fifth of its vascular plants, and botanists who shun acquaintance with mosses and liverworts overlook a substantial proportion of the diversity in our country's green mantle.

The green colour of mosses and liverworts raises their botanical status above that of more lowly cryptogams. Lichens and fungi are the Henry Fords of the plant world: you can have them any colour you like except green. Furthermore, lichens are not proper species at all, but ecosystems of two species living together, while fungi, pretty as they may fleetingly be for a week or two each year, are ecologically more animal than plant, as they profit from the misfortunes of other organisms, wherefore those of us with a fetish for frogstools may feel encouraged to join the Zoological Society. However that may be, alone among the non-vascular cryptogams, the green leaves and other corporeal accoutrements of mosses and liverworts confirm their status as proper plants, suitable subjects for the attention of field botanists.

Assured, then, of our botanical correctness, the Border Bryologists reconvened for 1995 with Roy Perry in the Clun Valley on a fine, mild morning in February. The Rock of Woolbury was our trysting place, a long-abandoned quarry of Silurian Shales, now a sequestered enclave embowered with oaks and further sheltered from wind by the lie of the rocks - an Arcadian amphitheatre perfect for bryophytes.

Here lives *Atrichum crispum*, a first record for Shropshire; and *Scleropodium tourettii*, a xerophytic pleurocarp now rare away from the coast, since much of the short turf it favours has been lost by changes in the management of land and the demise of the rabbit. Other classy incumbents include *Plagiochila spinulosa* and *Scapania irrigua*, while the apple-moss *Bartramia pomiformis* festoons the rocky ledges with its pale green leaves and capsules.

The forest tracks and hedgebanks nearby were equally interesting: growing on the fissured bark of elder trees, the epiphytes *Ulota phyllantha*, *Orthotrichum stramineum* and *Metzgeria fruticulosa* all have a rather westerly distribution in Britain, as does *Dicranella rufescens*, and another first record for the vice-county *Oligotrichum hercynicum*, which Daniel Wrench found on a path in the forest near the quarry.

Next day turned out equally mild and even sunnier as we disported at the north end of Wenlock Edge, where the calcareous rock and soil betrayed their content of lime by a range of calcicoles new to many in the party: *Homalothecium lutescens*, the less-common lime-loving cousin of *H. sericeum* which occurs so frequently on the tops of walls built of acidic stone; also *Trichostomum crispulum*, *Fissidens cristatus*, *Brachythecium glareosum*, *Campylium chrysophyllum*, *Cirriphyllum crassinervium*, *Ditrichum crispatissimum* (of the *D. flexicaule* group), *Aloina aloides* in abundance, *Pottia lanceolata*, *Leucodon sciuroides*, and the little leafy liverwort *Leiocolea badensis*, while a brave Jacob's Ladder, *Polemonium caeruleum*, had put out leaves but dared not flower so early in the year.

Over liquid lunch, the Chief Raconteur was in sparkling form with a highly entertaining account of how the Radnor Lily *Gagea bohemica* first arrived on Stanner Rocks. Rehydrated and refreshed by botanical banter, we returned to Wenlock Edge, where Roy found the uncommon pleurocarp *Entodon concinnus* in an old grassy quarry. Nearby, arable fields which had lain unploughed during the winter rains offered an unexpectedly diverse ephemeral bryoflora, including *Pottia recta*, *P. starkeana* ssp. *conica*, *P. lanceolata* and *P. intermedia*, distinguishable from each other by minute differences in the teeth of their peristomes. More *Pottia recta* turned up on a sandy bank in the wood, and *Leicolea badensis* made its second appearance of the day on a rocky ledge in a shaded quarry.

The advent of spring and the reappearance of flowering plants and ferns distracted us from our vocation until late July, when Roy Perry reminded us of our priorities as he called us back to point-duty for a weekend in Shropshire. With the mosses and liverworts fast frying in the arid heat, we sought out the damp springs and streamsides of the county's hill-country. In wet flushes on Wild Moor, high on the Long Mynd, we found a new locality for the rare *Bryum weigelii. Sphagnum russowii*, *Scorpidium scorpioides*, *Calliergon cordifolium* and *C. stramineum* also came to notice.

Next day we admired the lovely Ivy-leaved Bellflower *Wahlenbergia hederacea* on wet heath and hillside near Cleeton St Mary on the east side of Titterstone Clee Hill, while further up the hill wet springs amid otherwise uninspiring moorland contained the local Few-flowered Spike-rush, *Eleocharis quinqueflora*, Marsh Arrow-grass, *Triglochin palustris*, and the delicately-veined Lesser Skullcap, *Scutellaria minor*. Choice among the bryophytes, a few stems of the little leafy liverwort *Odontoschisma sphagni* weaved between the bog-moss like fleas through fur. *Riccardia multifida*, *Pellia neesiana*, *Cinclidotus fontinaloides* and *Calliergon stramineum* were noted, while black patches of *Andreaea rupestris* sprouted from the pale grey gritstone boulders. Earlier reconnaissance had revealed the liverworts *Barbilophozia floerkei* and *B. attenuata*, the former well-represented in the rock-strewn grassland on the upper slopes of the hill. These two liverworts confirm Titterstone Hill's growing reputation as an easterly outlier in the distribution of species constrained by their ecological requirements to the higher, wetter parts of western Britain.

Our last meeting of 1995 was spread over the weekend of December 9th and 10th, when Roy Perry attended to the paucity of records for the 10km square SO48 around Craven Arms so evident from the *Atlas of the Bryophytes of Britain and Ireland.* But by close of business on the Sunday, SO48 had become one of the best recorded squares in Shropshire, with 151 species of bryophyte.

Frosty ground hindered progress, the County Recorder having failed to bring the blow-torches, but the white heat of enthusiasm generated by ten ardent moss-lovers gathered (or huddled) at Stokesay Church went some way to overcoming the unpropitious conditions. Norton Camp Wood produced *Mnium stellare*, *Metzgeria fruticulosa* and, growing on ash-boles, were several clumps of *Dicranum tauricum*, a small moss of rather southerly distribution, with uniseriate gemmae in groups on its leaves, especially near the broken leaf-tips.

Next day found us mossing about on Wenlock Edge, near Harton, several miles south-west of where we had botanised in February. The Wenlock Limestone exposed in old quarry-workings, and the loamy banks in the woodland supported several species of note: *Eurhynchium pumilum* and *E. schleicheri*, *Fissidens incurvus* (distinguishable with care from *F. pusillus* by its inclined capsules), luscious specimens of *Homalia trichomanoides*, also *Encalypta streptocarpa*, *Neckera complanata* and *Rhynchostegium murale*. Nearby, several large clumps of the uncommon Wood Barley, *Hordelymus europaeus*, still retained their dead-heads.

1996. Fair-weather botanists time their *al fresco* activities to coincide with the cricket season, venturing out for primroses, and scuttling back indoors with the dead-heads. But there also thrives a hardier species of botanist, one who braves the vagaries of wintry weather to admire mosses and liverworts, whose demure hues endow the umbered hills and vales with a charm showing to best effect in the soft light of winter - a botanical pleasure denied to naturalists familiar only with the harsher light and gaudy colours of summer.

Most mosses and liverworts like it best when there is a "R" in the month for Rain. They hold this element in higher esteem than warmth or sunshine, which is also why bryophytes look greener on the Welsh side of the border, and many species peter out further east. Remarkably, the hills of Radnorshire take twice as much rainfall as land only 30 miles to the east.

The beginning of March found us at the south-western extremity of the Long Mynd, making good a deficiency of records from the 10km square SO38. The Long Mynd is a huge lump of relentlessly acidic, metamorphic, Precambrian rock, thinly covered with well-nibbled fescues and bent grasses. *Hedwigia stellata*, *Dicranella rufescens*, *Racomitrium canescens* (sensu lato), *Pohlia annotina*, *Grimmia trichophylla*, *Bartramia pomiformis*, *Barbilophozia attenuata* and *Scapania compacta* attested acidic ground, but someone found a base-rich pocket with *Ditrichum flexicaule* and *Trichostomum brachydontium*, and Ralph Martin came across *Cryphaea heteromalla* on the bough of an Elder tree.

Later in the day we moved off the slopes of the Mynd to a wet pasture and wood below, where *Sphagnum auriculatum*, *Plagiothecium curvifolium*, and the liverworts *Lophozia ventricosa*, *L. excisa*, *Aneura pinguis*, *Riccardia multifida*, *Jungermannia atrovirens*, *Scapania irrigua*, *S. undulata* and *Odontoschisma sphagni* gave interest. Lacking the company of an expert that weekend, the bryophytes sensed our uncertainty, turning insubordinate after capture in the field, and refusing to give their names, capitulating only after thorough interrogation under the bright lights of the microscope. While this was going on, the botanical language bore little resemblance to the temperate tones of the best Floras, but concerted scientific endeavour slowly transformed Anglo-Saxon opinion into a more polite list of Latin binomials.

The remainder of the summer was given over to vascular plants. Not until late October did a gang of four go out to play in the pouring rain at Comley Quarry near Church Stretton. This quarry is a small nature reserve of the Shropshire Wildlife Trust, with trees now shading the Cambrian sandstone and thin bands of limestone. 32 species came to notice, including *Orthotrichum affine*, *O. lyellii*, *O. diaphanum*, *Encalypta vulgaris*, *Plagiomnium undulatum* and *Trichostomum brachydontium*.

After lunch we ventured around the east flank of The Lawley, finding *Climacium dendroides* in a wet flush with Marsh Pennywort, *Hydrocotyle vulgaris*, Bog Pimpernel, *Anagallis tenella*, and Fen Bedstraw, *Galium uliginosum*. Further on, an interesting expanse of damp heath and rough pasture yielded *Barbilophozia attenuata*, with its leafy, attenuated stems reminiscent of tiny hazel catkins. Marsh Lousewort, *Pedicularis palustris*, and bog-mosses indicated moisture in the ground, and on a patch of bare soil grew an attractive acrocarp, which gave every appearance of being new to science, untraceable through any key. Its proud finder was on the point of observing approved taxonomic procedure by naming it after the hill near to which it grew, when its picture infuriatingly appeared in Smith's *Moss Flora* next to the name of *Leptodontium flexifolium*.

November found us attending to another Shropshire Wildlife Trust nature reserve in the Hope Valley near the Stiperstones, an outing which confirmed our growing suspicion that bryodiversity is not the cardinal criterion for establishing local nature reserves in this part of the world. The Hope Valley reserve may have the geologists drooling over its Ordovician mudstones and siltstones "with intrusions of acid tuffs", but the bryophytes were not impressed, and *Leucobryum glaucum*, *Radula complanata* and *Calypogeia muelleriana* were the best of a thin list of 22 species. What little interesting habitat there was seemed to be disappearing into a huge bonfire surrounded by gleeful conservationists. Bryological embarrassment was averted in a shady, sheltered ravine outside the nature reserve to the east of the main road, secluded and safe from ravages of marauding conservationists. Here grew *Neckera complanata*, *Chiloscyphus polyanthos*, *Lejeunea cavifolia* and *Scapania irrigua*, but we took early tea after accepting the offer of bad light.

We take interest in south Shropshire's bryoflora partly because others no longer do. One has to look back to the late 19th and first part of the 20th century for information about the occurrence of mosses and liverworts in the county, when interesting records were reported each year in the Caradoc & Severn Valley Field Club's *Record of Bare Facts*. The *Bare Facts* were formerly published annually as appendages to the Club's *Transactions*, and extensive runs of these valuable records up to the 1930s lie forgotten and unread in the Woolhope Library. But the Shropshire club's vitality waned after the Depression, and sadly it can no longer measure up to the task of either identifying or recording bryophytes. Our own Society's botanical work in the Border Counties therefore assumes greater importance, as its Salopian peer lapses into terminal coma with the passing of its final years.

A thriving natural history society operating in tandem with a crusading conservation-trust makes a healthy partnership for furthering interest in the study and welfare of the county's wildlife, and any shire lacking this balance deserves our condolence. So it was poignant, on our visit to Stokesay Churchyard, to pass by the grave of the Reverend James Digues La Touche. There his bones lie still in the mouldering dust, and his soul cries out in silent torment at the melancholy fate of the Field Club he strove so hard to foster. May his heart's vain hieroglyph find consolation in a rising generation of naturalists more kindly disposed than its predecessors to investigating the bryological secrets of the delightful countryside which surrendered the Reverend gentleman to his fathers a century ago.

The Willows of Mere Pool

Alex Lockton

It is quite an interesting task to try to identify the importance and character of a site, and so provide some useful advice to the owner or manager. In the suburbs of Shrewsbury, just off the Bridgnorth Road, there is one of the few remaining kettleholes of the town, Mere Pool, otherwise known as Springfield Mere. It is situated in a park managed by the Borough Council and surrounded by mown lawns. The main use is by local children, but there is a trim track and a football pitch there as well.

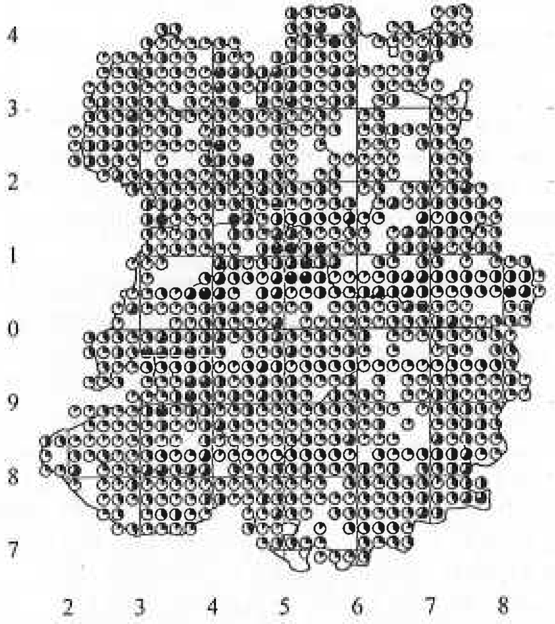
Such a setting could be a disaster for a site of wildlife importance, and at first glance there doesn't seem much of interest. William Leighton recorded "Mare Pool" as having a typical fringe of wetland vegetation, including Hop Sedge, Bottle Sedge and Bladder Sedge, *Carex pseudocyperus*, *C. rostrata* & *C. vesicaria*, Branched Bur-reed, *Sparganium erectum*, Reedmace, *Typha latifolia*, and Greater Spearwort, *Ranunculus lingua*. He also noted both Tubular and Fine-leaved Water-dropwort, *Oenanthe fistulosa* & *O. aquatica*. Thus it seems likely that the pool, which would have been in a more rural setting in the 1830s, would have had the surrounding swamp and fen that is found on only the better-preserved meres today.

Nowadays Mere Pool has almost bare muddy shores, shaded by willows and intensively grazed by water fowl, and hardly any reed fringe at all. It has been surveyed by the Wildlife Trust, most recently in 1994, as part of the NRA-funded Water for Wildlife survey, and is designated as a County Wildlife Site; but no species of any particular importance or interest were recorded, so it is difficult to see what conservation advice could be offered.

However, in 1978 P.H.Cornish recorded an unusual willow - the **Fine Basket Osier**, *Salix* x *forbyana* Smith. This shrub, which was much valued for basket-making, has recently been recorded in only one other site in the county. At a chance meeting with Mr Cornish, who runs a hotel in town, I asked about this record, and he informed me that the trees had all been cut down and none were left on the site. So this year we decided to have a good look at the willows at Mere Pool and see precisely what was still there. Specimens were sent to R.D. Meikle, the BSBI referee, for determination. The following were found:

- ☐ *Salix alba* var. *caerulea* (Smith) Dumort. **Cricket-bat Willow** is a large tree with rather dull foliage compared to that of *S. alba* var. *alba*. This tree is common in the south-east of Britain but we have only one other record of it in Shropshire, at Shrewsbury Castle (W.A.Leighton, 1841). It is listed in Sinker's *Flora* as occasionally planted, but there are no locations given.
- ☐ *Salix cinerea* ssp. *oleifolia* Macreight, **Rusty Sallow**. This is probably the commonest species of willow in the county. It forms a tall shrub or small tree and is frequent around Mere Pool and most wetland sites.
- ☐ *Salix fragilis* var. *russelliana* (Smith) Koch. **Bedford Willow**. The subspecies of Crack Willow, *Salix fragilis* L. agg., are often overlooked, but Meikle[1] writes: "the distinctions between the variants, though relatively slight, are so consistent that it is impossible to regard the aggregate as a single, variable unit." Bedford Willow is the commonest variety in Britain but is very rare in Europe. It does not reproduce well, and specimens are almost always planted.
- ☐ *Salix purpurea* L., **Purple Willow**. This was first recorded here by Charles Sinker in 1980, and several shrubs are still present. It is native to Britain but is rather uncommon in Shropshire and is probably planted wherever it occurs.
- ☐ *Salix* x *reichardtii* A.Kerner. This is the hybrid between *S. caprea* and *S. cinerea*, and was first recorded at Mere Pool by Sarah Whild in 1996. There are not many records for this hybrid in the county, the earliest ones being by Franklyn Perring in 1975, but it is probably quite common. Meikle[1] writes: "pure *S. caprea* is, I am certain, distinctly less common than is generally supposed". There are several old records of *S. caprea* at Mere Pool, but we have been unable to find any convincing plants of the pure species this year.
- ☐ *Salix* x *rubens* Schrank. A hybrid between *S. alba* and *S. fragilis*. It is a variable tree, depending on the subspecies of the parents. We have not yet determined the variety of *rubens* present at the pool.
- ☐ *Salix viminalis* L. **Osier**. This is a very common species, probably not native in Britain at all, but often well established and naturalised along rivers throughout the county, although mostly in the lowlands.
- ☐ Finally there is a tentative record of *S. daphnoides* Villars, **European Violet-willow**. This is not a native species, but it is apparently quite widely planted. It has never been recorded in Shropshire before, but Meikle[2] writes: "not at all sure of this... normally the twigs are coated with a whitish bloom, at least at the nodes, but your specimen looks as if it might have been growing in shade, and the bloom is not apparent." Nevertheless, he concluded that our specimen was most likely of this species.

This is a very rich collection of willows. If we accept the identification of the *S. daphnoides*, then eight species are currently to be found at the pool. Charles Sinker recorded *S. triandra* L. there in 1981 and, together with



Left: coincidence map of 25 willow species recorded in Shropshire. Records of "*Salix* sp." and Weeping Willow are excluded, but subspecies of *S. cinerea* are included where known. The pie-charts represent relative numbers of species recorded in each tetrad, regardless of date. A completely black circle shows the maximum number recorded (eight or nine species). In squares where no willows have ever been recorded there is no chart.

The maximum values are recorded in six tetrads - in three places along the Severn (at Melverley, Preston Montford and Coalport), at Crose Mere, Brown Moss and at Mere Pool. Inevitably, perhaps, the map is more likely to show the distribution of the botanists who record willows, especially in the many tetrads with more than 3 or 4 species, but hopefully it does illustrate the areas with particular concentrations of these trees.

Cornish's record of *S.* x *forbyana*, this gives a total of ten species known in one site, which is the highest score for any location in Shropshire.

What recommendations, then, can be made as a result of these observations? Firstly, it is important to recognise that Mere Pool has a long history of use and of knowledge of its botany. There are records by Edward Williams from the 18th century, William Leighton in the C19th and W.P.Hamilton in the early part of the C20th, and with this information we can learn a lot about its ecology.

Management to conserve the many sorts of willow and perhaps restore what must once have been beds of coppiced basket willow, would be ideal. Good basket willow is apparently difficult to get hold of, and most of the wood used today comes from abroad, so this presents an interesting marketing opportunity. Coppicing more of the trees around the pools would also let more light in, and perhaps help the fringing reedswamp to grow back. Finally, it would cost nothing to cease planting exotic species of tree around the pool, and instead use cuttings of the willows already present to create more woodland and scrub. Thus a few small changes in the management of the site could conserve and enhance its ecology while continuing to meet the requirements of the local community.

Willows recorded at Mere Pool

	CAS 1985	SWT 1994	SFG 1997
Salix alba var. *caerulea*	-	-	+
Salix x *forbyana*	+	-	-
Salix viminalis	-	-	+
Salix caprea	+	+	-
Salix cinerea	+	+	-
Salix cinerea ssp. *oleifolia*	-	-	+
Salix x *reichardtii*	-	-	+
Salix fragilis	+	+	-
Salix fragilis var. *russelliana*	-	-	+
Salix purpurea	+	-	+
Salix triandra	+	-	-
Salix x *rubens*	-	-	+
? *Salix daphnoides*	-	-	+

Key:	**CAS 1985**:	Species recorded in Sinker's Flora.
	SWT 1994:	Water for Wildlife survey.
	SFG 1997:	Records by Sarah Whild, Alex Lockton & Rob Stokes, det. R.D.Meikle.

References

1: Meikle, R.D. 1984. *Willows and Poplars*: BSBI Handbook No 4. BSBI, London.

2: Meikle, R.D. *pers. comm.* **Herb. SFG**

The Origin of the Old River Bed at Shrewsbury

David Pannett & Colin Morey (First published in the *Bulletin* of the Shropshire Conservation Trust **35**:7-12 (1976). Reproduced with minor corrections by permission of the Shropshire Wildlife Trust and David Pannett.)

One of the most famous features of Shrewsbury is its superb defensive site within a loop of the River Severn; this is perhaps best appreciated in an aerial view, since at ground level many features are obscured by buildings. Nevertheless, Shrewsbury is fortunate in possessing several miles of riverside walk along which both resident and visitor can explore the river valley. One of the most curious parts, however, is not so easily accessible and is often overlooked: this is the great abandoned loop of the river valley generally known as the "Old River Bed" which encircles the area known in the middle ages as the 'Isle of Coton'.

When and how this was cut off from the main river has long been one of the most intriguing mysteries along the Severn Valley[1] and it is pleasing to report that field work based at Preston Montford has been groping towards an answer.

For the benefit of strangers, the course of the Old River Bed, shown by Fig. 1 is as follows: the partially silted-up channel can be seen clearly along the Berwick Road, where it first appears by Coton Manor flats at the entrance to the Agricultural Show ground. The old lane here was once the main road before the present Berwick Road was built in the eighteenth century[2] and its route significantly exploits the first banks of silt plugging the mouth of the old river. Such banks also tend to trap flood-water which can so dramatically reveal the old channel as it swings along and across Berwick Road and on around to the Ellesmere Road at Cross Hill.

At this midpoint in the circuit, most remote from the main river, as shown by Fig. 2, the old channel lies completely filled with peat up to the level of the floodplain, so that it lies hidden in a wide ribbon of marsh anciently known as Sharde Wallemor and Longemour. Starting here in a deep ditch the Bagley Brook now drains towards the outlet closely following the line of the channel. However, by Ditherington, the whole channel has been filled in with town rubbish and gasworks waste, so that the high water level has been maintained in the marshland area.

Below this, near Castle Foregate the whole valley has been further buried under railway yards, so that its shape can only be traced with the aid of old maps, especially those showing field and parish boundaries following the line[3]. Lost features include a set of medieval fish ponds, which no doubt made good use of the old channel. The eventual outlet of the Bagley Brook can be seen as a culvert under the old Southams Brewery in Chester Street. Here the former open end of the channel has been thoroughly plugged with fresh silt banks, not unlike those to be seen at each end of the barge gutter.

Throughout this circuit the Old River Bed exhibits patterns of channel, floodplain, terrace surface, and steep cliff or 'bluff', similar to those on the main valley and to understand them we must consider the history of the whole river valley.

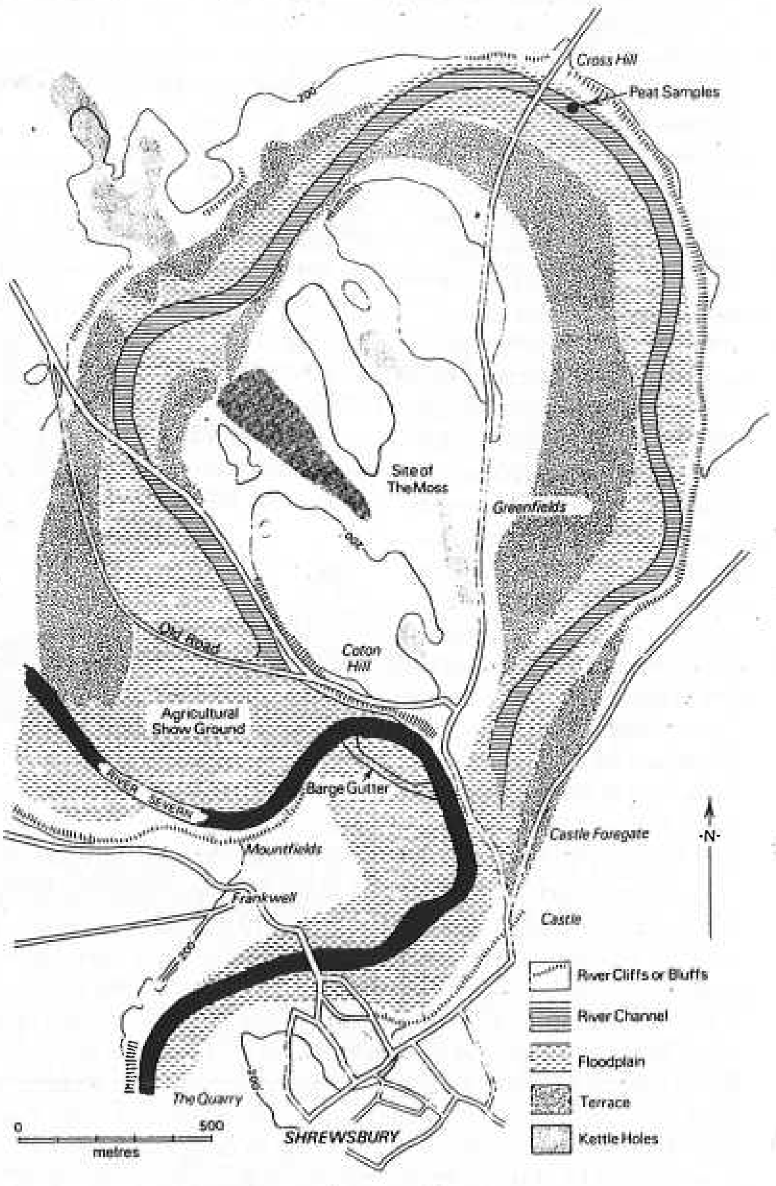
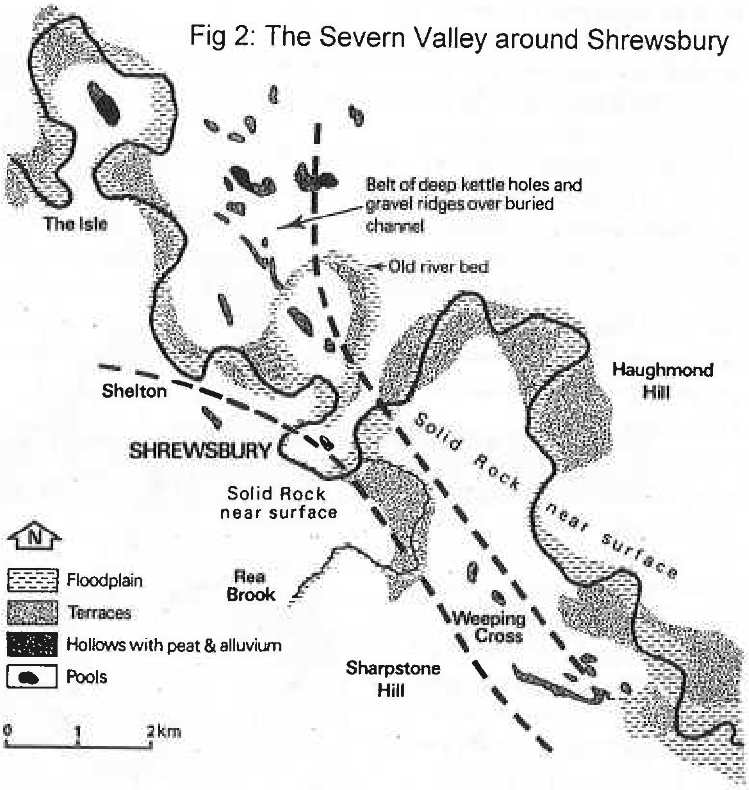


Fig 1: The Old River Bed at Shrewsbury

The present course of the river Severn, across the Shropshire Plain, developed during the melting of an ice sheet which invaded the area from the Irish Sea and the Welsh Mountains over 30,000 years ago. Around Shrewsbury, much of the ice was eventually left stranded and melted away to leave a chaotic pattern of boulder clay and gravel mounds between which meltwater spread out sheets of sand and gravel, as it drained towards the Ironbridge Gorge. Borings have shown that a westward extension of this gorge actually extends westwards under Shrewsbury and must have been scoured out by meltwaters trapped under the thick stationary ice sheet. With thinning of the ice, the same meltwater streams then backfilled the deep gorge with sand and gravel which buried many blocks of ice. Complete melting of all ice has thereby left a characteristic pattern of gravel ridges aligned N.W. - S.E. in the direction of waterflow, between which lie 'kettle holes' where ice was once buried[4]. In several of these hollows, pools remain, while others have become filled with peat. As shown by Fig. 2, such surface features can be recognised in a belt across Shrewsbury from Weeping Cross, through the town centre (ancient pool under Old Shire Hall) and out to beyond Coton Hill.

Gradually, the river developed a more orderly channel amid these chaotic deposits and even cut down into solid rock in some places, such as between Kingsland and the Quarry. At first, remaining glaciers in the Welsh headwaters, and the plain by Ellesmere and Whitchurch, still supplied meltwater heavily laden with sediment, which caused it to 'braid' and 'meander' over a wide gravelly floodplain. Then, in the final stages of the Ice Age, seasonal snow melt together with increased cyclonic activity in these latitudes produced larger but 'cleaner' river flows which carved a deep wide channel into the old gravel to leave it as a terrace. At the same time the river continued to develop wide loops and meanders which still dominate the map of the valley, shown by Fig. 2. Since then, during the last 10,000 years progressively drier and warmer climates have left the river very much shrunken so that it only occupies part of its former channel and has been filling the remainder with silt to form its present floodplain[5]. A meander is a regular pattern of erosion, deposition and a laterally migrating channel whose size is proportioned to the size of the river[6] and, since shrinkage, the river should go on to develop smaller meanders within the original big meanders. However, this has not happened to any extent in the Severn, except perhaps on part of the Old River Bed near Ditherington. Instead, the river passively follows the earlier larger bends and has only deformed its bed with a regular pattern of alternating shallow gravel banks, called 'riffles', and deeper pools. These are very stable features of the channel which have therefore played their part in the history of Shrewsbury by providing the only crossing points into the old town, first as fords, then as bridge sites. Below Coton Hill, another riffle was used by the Town's Fishweir during the Middle Ages and the barge gutter was dug to by-pass it[7].

Fig 2: The Severn Valley around Shrewsbury



Since channel width and floodplain shape along the Old River Bed are so similar to those of the present river, cut-off must have taken place during the last 10,000 years, in the very period characterised by relative channel stability! A closer look at the river valley shown by Fig. 2 does, however, reveal two features which may provide an answer to this paradox. One is the rapid erosion at Shelton Rough where, at a sharp bend, the river is cutting deeply into the steep valley side, while building up the flood plain opposite with successive banks of silt, termed 'scroll bars'. As erosion has continued, the angle of bend has become sharper and the pool excavated by the lightly rotating water has become even deeper and yet more effective in undercutting the soft sandy sediments. Since the yield of stones from this particular sediment is so small, there is no "lag deposit" of big stones to clog the river and retard the process, as it does in so many other parts of the river. Clearly, in certain circumstances of sharp bend and soft substrate, the otherwise stable river is capable of biting deeply into its valley side. Significantly the recently eroded scar below Mountfields and the gap which produced the cut-off, lie opposite a similar pattern of 'scroll bars', still preserved in the show ground car park, (although recently destroyed elsewhere by levelling of the show ground).

The second feature is the pattern of ridges and deep hollows through which the river has cut its valley. At least one hollow descends to river level, another under Greenfields railway yards once held a peat moss, and it is not impossible that yet another once existed between Coton Hill and Frankwell, through which the river could have cut with relative ease. Significantly the 'new' section of valley has the same N.W. - S. E. orientation as other kettle holes, while glacial sand and gravel exposed at its upstream end suggests that its right hand side could not have been moulded by the river.

The next problem is estimating when, within the 10,000 year period, cut-off actually took place. Comparing 'old' and present valleys it is clear that the floodplain of the old river bed still reflects the regular width of the earlier big river and has not been widened by subsequent erosion of the bluffs, as has since happened in places on the present river between Shelton and Frankwell. Landscape evidence therefore suggests that it must have been cut off earlier rather than later during that period. On the other hand, the floodplain had been fully formed so that the date could not be too early. 5,000 years ago would therefore be a compromise date.

Fortunately however, the landforms are not the only clue to the history of the site. As soon as water ceased to flow through the old river bed, fine sediment and plant remains started to accumulate on the floor of the 'ox bow lake' and over the centuries have built up a thick layer of mud and peat which has trapped and preserved the air-borne pollen grains characteristic of different periods. As already described by Beales and Birks in this Bulletin[8] observations from many sites have built up a general picture of climatic and vegetation change so that deposits can be approximately dated according to the proportions of different pollen which they contain.

As part of a Preston Montford course, borings were made in the peat-filled channel adjacent to the Ellesmere Road (SJ495150) and samples taken at 10 cm intervals for later analysis (by C.R.M.). As shown by Fig. 3 the total depth of new sediment above the gravel of the old river was found to be five metres, made up of the following three layers:

1) 4½ - 5 metres. The first-formed sediments are very fine light grey clays with very little organic matter - the type of sediment that would accumulate in a lake with still water and very little biological activity.

2) 1 - 4½ metres. The lake soon changed its character with the water becoming darker and more turbid as surrounding woodland and a fringing swamp of Alder (*Alnus*) and Willow (*Salix* spp.) contributed leaves and wood to the growing pile of black organic mud accumulating on the bottom.

3) 0 - 1 metre. The final phase came much more recently in the Middle Ages following major changes in the land use of the surrounding area; the natural woodland had been cleared and replaced by open pastures and arable land from which eroded soil now rapidly filled the lake. (The medieval open Fields of Coton are known to have occupied the adjacent terrace). Reeds and sedges then spread across replacing open water with the present marsh community. Recent attempts at drainage have undoubtedly made the surface more dry than it would naturally be.

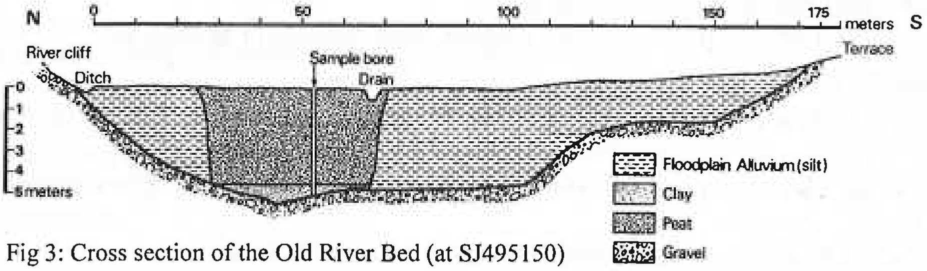


Fig 3: Cross section of the Old River Bed (at SJ495150)

The total depth of the section from which pollen samples were studied is about four metres and details of the analysis are shown in Fig. 4. Information that helps the interpretation of the diagram is shown on the right hand side - the ratio between tree and non-tree pollen and between combustible organic matter and the ashy residue after small samples had been ignited.

Pollen preserved in the lowest part of the section is almost entirely from trees, suggesting that mixed woodland covered most of the landscape. However, it is not very well preserved, so that relative proportions represented may not reflect their actual relative abundance in the woodland. Nevertheless there is enough to suggest that Oak (*Quercus* spp.) was important while Lime (*Tilia cordata*) was also present in some quantity. Lime pollen is extremely tough and preserves so well that a disproportionately high number of grains would have survived to be counted. Its presence is characteristic of the middle part of the post-glacial period, when it formed part of a mixed temperate forest in combination with Elm (*Ulmus*) and Oak. Elm declined rapidly at the start of the Sub-Boreal period (Zone VI Ib), some 5,000 years ago, and the relative proportions of these three trees in the count suggests that sedimentation began during this period.

The first major change takes place about 2.80 metres from the surface where, not only do the trees decline but Plantain (*Plantago* spp.) and other weed species appear, suggesting the arrival of agriculture. A second dramatic change occurs at 1.60m, where trees are replaced by all the classic indicators of agriculture while an equally dramatic change takes place in the surface of the marsh; sedges, sphagnum moss and grasses now appear for the first time in quantity. At the same level there is also a marked increase in the mineral matter to 90% of the dry weight of the sediment.

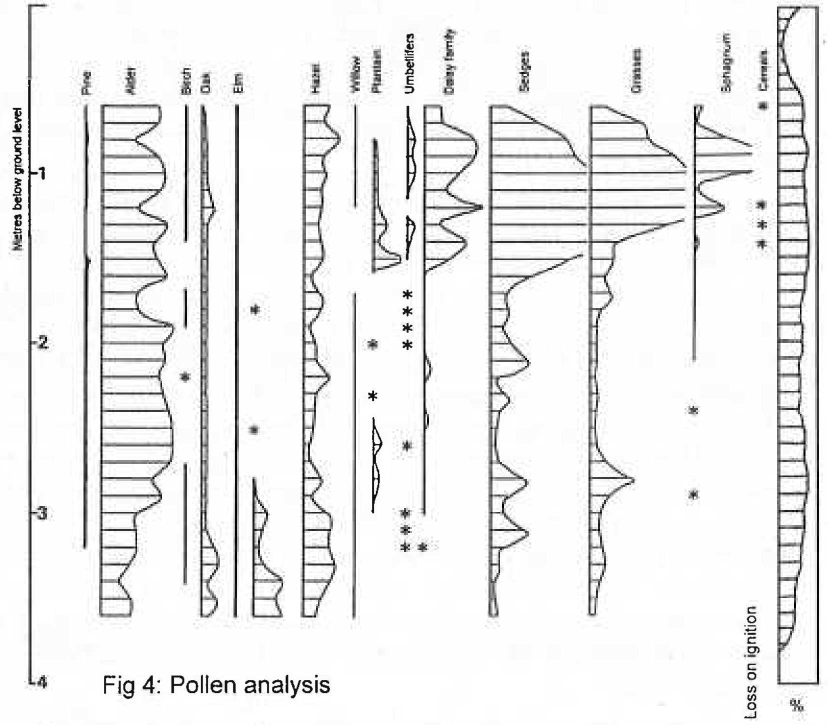


Fig 4: Pollen analysis

The technique of pollen analysis is of little use for precise dating, since it is only a barometer of ecological change and allows a series of zones to be delimited. These can be tied into an absolute time scale by means of precise radiocarbon dates, but as such dates are not available at present, for the meander site, any conclusions about ages must be speculative. Nevertheless, the story told by these samples support an age of 4 - 5,000 years suggested by the morphological evidence. They also show how wet conditions lasted into historic times so that the term 'Isle of Coton' was quite appropriate. Such results need not be considered the end of the work, but rather the beginning since there remain many unanswered questions. To have such a length of valley 'fossilised' at an earlier stage of development is a wonderful opportunity for further study relevant to our understanding of the whole Severn Valley. In any case, the area constitutes a varied area for geography and natural history field work conveniently adjacent to the town, which for the same reason is most vulnerable to abuse. Therefore, any enlightened or conservation policy needs the support of further studies.

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Some notes on the ecology of the Old River Bed, Shrewsbury

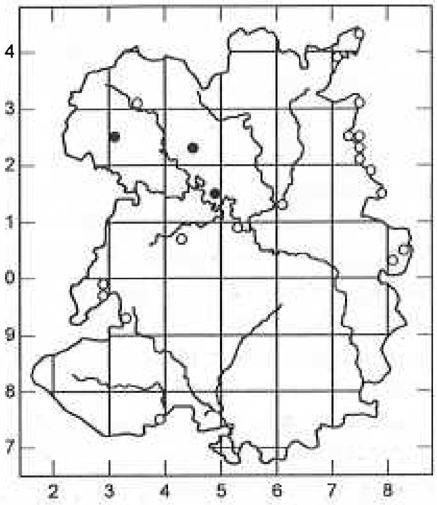
Sarah Whild & Alex Lockton

The Old River Bed is a most interesting and unusual site. As explained in David Pannett and Colin Morey's paper, the vegetation has arisen as a result of human intervention; but what has been created is a semi-natural swamp, in all probability rather like that which must have once occurred in river flood-plains throughout the county.

The most interesting area is the SSSI, which is situated between the Ellesmere Road (SJ494150) and Greenfields (SJ497143). It is a flat area 200m across and nearly 1km long, almost entirely dominated by sedge swamp - undoubtedly the largest such swamp in Shropshire. To the north is a narrow strip of ancient woodland on the steep slope of Mount Pleasant. Here and there are stands of willow and alder carr, often occurring on patches of mineral soil which may be the remains of former islands in the channel. Between these 'islands' the ground is of peat, often covered with shallow standing water, and with frequent deep ditches cut, for the most part, during the First World War, in a fortunately unsuccessful attempt to drain and cultivate the land.

It is interesting that William Leighton took little notice of the Old River Bed: in his Flora of 1841 he refers to the area just four times. On August 19th 1836 he is known to have collected Curled Pondweed, *Potamogeton crispus*, in flower from "ditches under Cross Hill, in the old course of the river Severn". He also reports that Water Avens, *Geum rivale*, and Lesser Pond-sedge, *Carex acutiformis*, were present. From the woodland he collected Bitter Vetch, *Lathyrus linifolius* var. *montanus*. This seems to support Pannett & Morey's theory that the current swamp is a result of water being impounded in the valley. In the early 19th century, then, it may have been mostly woodland and grassland, with the wetland plants being confined to the ditches. Of the plants that Leighton recorded, only Lesser Pond-sedge still occurs there.

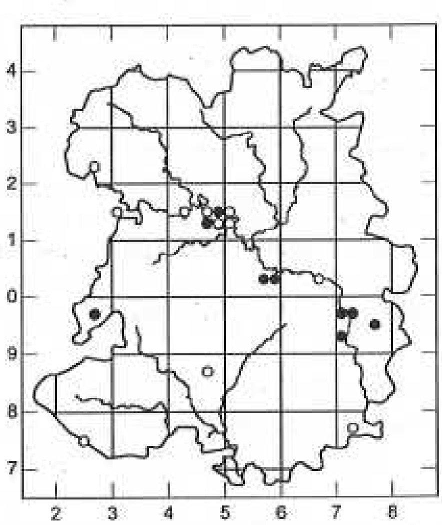
Unfortunately, since Leighton there appear to be no biological records whatsoever until 1979, when a team led by Martin Wigginton from the Nature Conservancy surveyed it. It seems that the ORB had been overlooked by botanists for more than 140 years. It has since been surveyed many times and quite a lot is known about the plants and animals that occur there, but it is a very unusual site and almost nothing has been published about it.



Above: *Carex disticha* in Shropshire. Recent surveys have revealed very few sites for this species, and the large quantity present at the Old River Bed represents a very significant proportion of the total county resource.

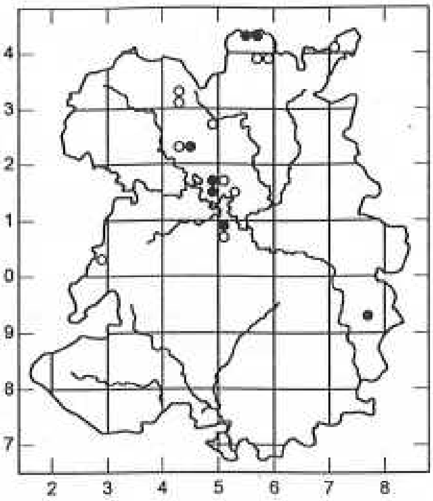
The main part of the valley is dominated by sedge swamp. In Shropshire and the West Midlands this is a type of community now confined to the margins of rivers, canals and lakes, and it rarely has an opportunity to form extensive stands. It may once have been common throughout the north Shropshire plain, occupying vast areas of shallow wetland around Whixall and Ellesmere, the Weald Moors and Baggy Moor. But all these shallow water bodies are long since drained and agriculturally improved. The ORB is, therefore, almost unique in the county in having what is essentially an undisturbed river floodplain vegetation.

The sedges are clearly the dominant and characteristic plants of the site. The most frequent is Lesser Pond-sedge, *Carex acutiformis*, which is dominant in places and occurs throughout. Brown Sedge, *Carex disticha*, which is rather uncommon in Shropshire, grows in some abundance with *C. acutiformis* and displaces it in large parts of the swamp. Bottle Sedge, *C. rostrata*, also forms large stands, often with *C. acutiformis*. Replacing these on drier ground, often forming tussocks to stand clear of the winter water levels, are Tufted Sedge, *Carex elata*, and Common Sedge, *C. nigra*. In the grassland around the edges is Hairy Sedge, *C. hirta*. These species appear to operate a vague successional process, with *rostrata* in the wettest parts, gradually being replaced by *acutiformis*, *disticha*, *elata*, *nigra* and then, finally, to *hirta*, which occurs in dry grassland.



Above: *Lathyrus sylvestris* is a plant of woodland margins with a very restricted distribution in the county.

This is a rather bewildering variety of sedges, which are all the more impressive for being present in such a great expanse. But even more interesting is the extraordinary variety of other species which often lurk undetected among the sedges. According to the National Vegetation Classification (Rodwell 1995), sedge swamp is supposed to be rather poor in other species. Much of the ORB is clearly *Carex acutiformis* swamp, but among the sedges are, in great abundance, other plants such as Marsh Marigold, *Caltha palustris*, Ragged Robin, *Lychnis flos-cuculi*, Cuckooflower, *Cardamine pratensis*, Meadowsweet, *Filipendula ulmaria*, Marsh Cinquefoil, *Potentilla palustris*, Lesser Water-parsnip, *Berula erecta*, Wild Angelica, *Angelica sylvestris*, Skullcap, *Scutellaria galericulata*, Marsh Speedwell, *Veronica scutellata*, both Common and Marsh Valerian, *Valeriana officinalis* & *V. dioica* and Hemp-agrimony, *Eupatorium cannabinum*.



Above: *Calamagrostis canescens* is typical of fen and carr woodland.

Other emergent species present include Water- and Marsh Horsetail, *Equisetum fluviatile* & *E. palustre*, Great Reedmace, *Typha latifolia*, Branched Bur-reed, *Sparganium erectum*, and Yellow Flag, *Iris pseudacorus*, which provide a varied sward, depending mainly on greater water depth provided by the ditches and the small stream that runs through the middle of the site. Rarities present include Purple Small-reed *Calamagrostis canescens* and the Marsh-orchids *Dactylorhiza praetermissa* and *D.* x *grandis*. This comprises a rich and unusual sward that is difficult to classify among the types of swamp and fen vegetation found in the rest of Britain.

Although there is a stream and several ditches, open water is almost impossible to find, and Water-violet, *Hottonia palustris*, Spiked Water-milfoil, *Myriophyllum spicatum*, Broad-leaved Pondweed, *Potamogeton natans*, and Common Water-starwort, *Callitriche stagnalis*, are easily missed.

Throughout the site there are areas of succession to drier ground. False Oat-grass, *Arrhenatherum elatius*, is common in some areas, as is Rosebay Willowherb, *Chamerion angustifolium*. The scrub is largely of Grey Willow, *Salix cinerea*, Crack Willow, *S. fragilis*, and Alder, *Alnus glutinosa*.

Also of some interest, however, is the woodland that rises above the ORB to the north. This runs in a narrow strip along a steep slope immediately below a housing estate and, in many places, is disturbed by recreational use and parts have even been enclosed (illegally) by neighbours. However it is still of considerable value and includes large sprawling plants of Narrow-leaved Everlasting-pea, *Lathyrus sylvestris*, which is something of a speciality of the Shrewsbury district, and occurs in such nearby locations as Shelton Rough, along the Old Canal and by the Severn. The woodland is largely of Wych Elm, *Ulmus glabra*, Pedunculate Oak, *Quercus robur*, Hawthorn, *Crataegus monogyna*, Blackthorn, *Prunus spinosa*, and Crack Willow. It plays a particularly valuable role as a buffer strip around part of the swamp and contains a large - but now apparently almost deserted - badger sett.

The non-SSSI portions

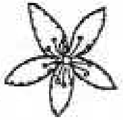
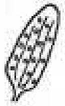
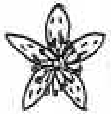
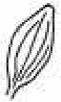
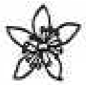
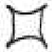
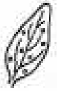
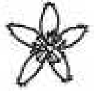
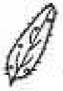
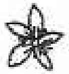
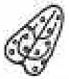
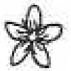
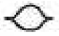
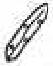
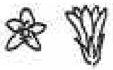
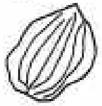
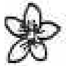
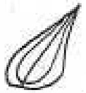
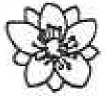
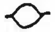
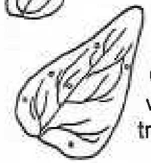
All of the above refers to the best known part of the Old River Bed - the area owned by the Borough Council - which has a board-walk and reasonably good public access. The remaining area is far larger and is in private ownership. Much of it is agriculturally improved, with just a narrow strip of swamp along the centre of the old channel. It does, however, flood during most winters over a quite extensive area. Although the privately-owned parts of the ORB are of less interest, it does perhaps constitute a single hydrological and geomorphological feature. The Borough Council's management plan states an ambition to include the whole area in a local nature reserve. This would be a marvellous accomplishment and would create a site of exceptional nature conservation value and an undoubtedly highly popular local amenity. However, no progress has been made towards achieving that goal, and the only recognition that the remainder of the site receives is that some of it is designated a Wildlife Site by the Shropshire Wildlife Trust.

References & Acknowledgements

☐ Rodwell, J.S. (Ed) 1995. *British Plant Communities 4: Aquatic communities, swamps and tall-herb fens.* Cambridge University Press.

Thanks are due to English Nature for access to data collected by the England Field Unit in 1979 and by staff from the West Midlands team subsequently; also to Shrewsbury & Atcham Borough Council for sight of Paul Jepson's Management Plan.

Quick-reference guide to St John's-worts in Shropshire

Perforate St John's-wort *Hypericum perforatum*		black dots on edges of petals		stem round with two ridges		leaves with translucent glands which appear to be holes when held up to light	Frequent on basic, dry soils
Imperforate St John's-wort *H. maculatum*		black dots on petals		square stem		no glands	Frequent on damper soils, woodland margins and hedgebanks
Square-stemmed St John's-wort *H. tetrapterum*		no black dots		square stem with obvious "wings"		translucent glands	Frequent on wet soils - marshes, river banks and wet meadows
Hairy St John's-wort *H. hirsutum*		glands at tip of petals		round, hairy stem		some translucent glands - also hairy	Occasional on calcareous grassland, hedgebanks and woodland margins
Slender St John's-wort *H. pulchrum*		black dots on margins of petals		round stem		translucent glands - cordate leaf bases	Occasional on dry, usually acid soils - grasslands, heaths, woodland margins
Trailing St John's-wort *H. humifusum*		no black dots		stem round with two ridges		translucent glands - long narrow leaves	Occasional on acid soils in woods and heaths
Marsh St John's-wort *H. elodes*		flowers half-open		round stem		may be downy, giving grey-green colour	Rare in Shropshire - by boggy pools and flushes
Pale St John's-wort *H. montanum*		no dots pale lemon-yellow		round stem		may have translucent glands and black dots on underside	Very rare in Shropshire, on limestone grassland
Tutsan *H. androsaemum*		large (2cm) flowers with sepals almost as long as petals		stem round with two ridges		relatively large (up to 15cm) leaves with occasional translucent dots	Uncommon - usually in old woodland on heavy soils.

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Slender Tufted-sedge, *Carex acuta* L., in Shropshire

Alex Lockton

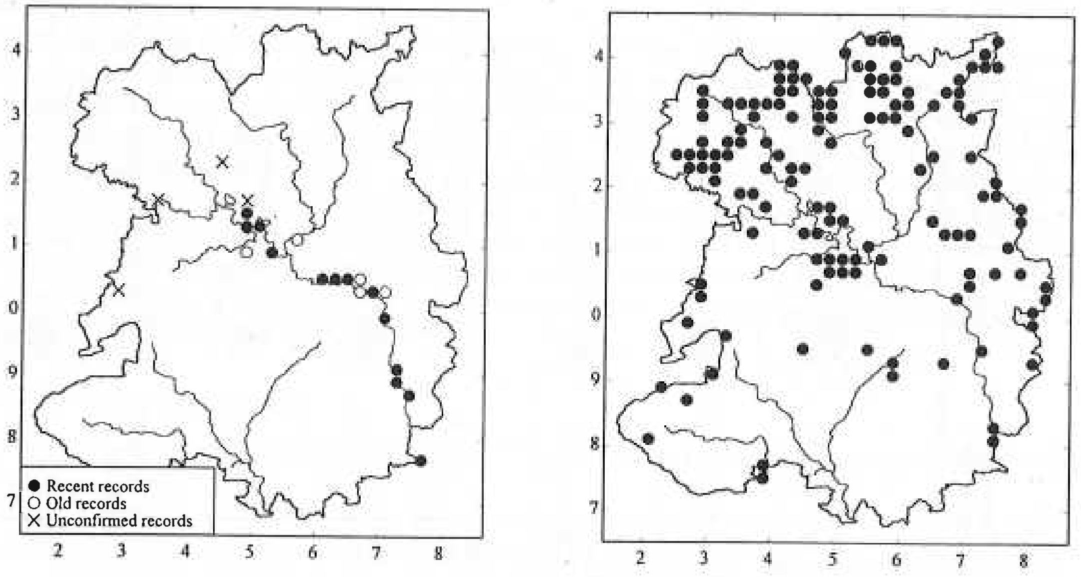
Slender Tufted-sedge is described in Sinker's *Flora* of 1985 as occurring in "shallow water and muddy banks of the flood zone at the edge of larger rivers, rooted in alluvial mud.... Tolerant of frequent flooding and resistant to uprooting by the river in spate." It is a tall sedge, usually found growing in dense, rhizomatous stands in shallow water. Where I've seen it on the narrow and precipitous margins of the Severn, it has appeared grey with the silt deposited on the leaves, although this is not its true colour, which is a brighter green.

Looking through the records of this species, a confusion seems to exits between Slender Tufted-sedge and Lesser Pond-sedge, *C. acutiformis*. The two species are strikingly similar in size, habit and structure. On the whole, *C. acutiformis* is a larger plant with broader leaves and larger flowering spikes, but it is very variable, and the range of morphological characteristics clearly overlaps between the two species. This is compounded by the similarity of the scientific names - so similar, in fact, that in the commonly-used RP3 record card (dating from 1969), the two species are actually listed in reverse alphabetical order, as a result of abbreviating the names to different lengths. This causes unnecessary confusion.

The key in Stace's *New Flora* (1997) and most other botany texts distinguishes *C. acuta* from *C. acutiformis* on the number of stigmas in each female flower, there being 3 in *acutiformis* but only 2 in *acuta*. Unfortunately, this distinction is somewhat blurred by his later comment that *acutiformis* has: "Stigmas usually 3; fertile plants with 2 stigmas might be derivatives of *C. acutiformis* x *C. acuta*." Assuming that most of us have been using the number of stigmas as the diagnostic feature (which seems to be the case), this must cast some doubt on a number of records.

Another clue to the identification of a species is its habitat. By good fortune it seems that these two species have quite distinct preferences. Nearly all the records of *C. acuta* in Shropshire are from the banks of the Severn, where it was first recorded by William Phillips Hamilton in 1896, although William Leighton described it from "sides of pools and rivers, frequent" in 1841. Since then it has been recorded along the Severn by William Hunt Painter (1901), Franklyn Perring (1975), Bill Thompson (1980) and Ian Trueman (1982), among others. By contrast, *C. acutiformis*, which is common in ditches, canals and still water, particularly in the north Shropshire plain, has never been recorded actually within the Severn. Whether this is to do with water chemistry, the speed of flow, or some other factor, I don't know.

There are few records of *C. acuta* in sites other than the Severn. Edward Williams recorded it in the "River Tern, &c." in about 1800; in about 1841 Francis Dickinson noted it at Malthouse Pool in Coalbrookdale (which has now gone) and Leighton himself found it at Alkmund Park Pool, where it was subsequently recorded by Martin Wigginton *et al.* in 1979. Other interesting records are from Bomere Pool (Hamilton, 1901) and Moon Pool, Benthall (Painter, conf. F.W.White, 1901). I have queried a few other, recent, records, and the recorders all expressed their doubts about the identification. At least one is clearly a mistake for *C. acutiformis*, caused by the confusing abbreviations on the BRC card.

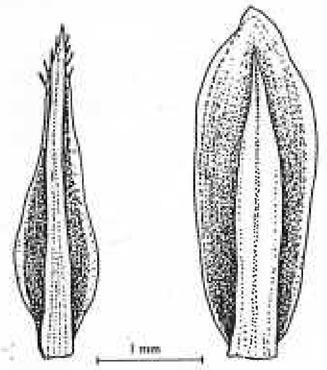


Above: tetrad distribution maps of *Carex acuta* (left) and *C. acutiformis* in Shropshire, showing the very different distribution of these two species.

While it is impossible to dismiss the older records, it seems that there are no current sites for *C. acuta* in Shropshire apart from the Severn. The only recent records that cannot be eliminated from our enquiries are from Fenemere (SJ42), Alkmund Park Pool (SJ41) and Marton Pool, Chirbury (SJ20) - all of which were apparently made by a team from the Nature Conservancy Council in 1979, but which have not been repeated despite several searches.

However, in 1992 and 1995 Chris Walker and Sarah Whild reported *C. acuta* at the Old River Bed in Shrewsbury. This is a rather more likely site, in that the plant could have been introduced by the river itself at some point in the past. Unfortunately, a fire destroyed the relevant part of the site in 1996, and we have so far been unable to verify the records.

This year there was brief excitement by what I thought was the discovery of *C. acuta* in a swamp alongside the River Tern, on the Staffordshire border. This was a plant with only two stigmas, but was growing amongst a large swamp of *C. acutiformis*. Unfortunately, examination of the glumes of the female flowers leads us to suspect that the plant is, in fact, simply the unusual form of *C. acutiformis* with this attribute - although possibly a hybrid. This character, which is mentioned briefly by Jermy, Chater & David in *Sedges of the British Isles* (1982), seems to be a more reliable feature for distinguishing the two species.



The glumes of the female flowers of *C. acutiformis* (left) and *C. acuta* (right), collected on the River Tern and R. Severn 1 July 1997. The former has an acuminate tip with translucent serrations clearly visible at x 40 (use a microscope).

Del. S.J.Whild

It may be that *C. acuta* is now to be found in Shropshire only along the Severn. It is known to be present in the lower reaches between Bewdley and Ironbridge, and a survey by Daniel Wrench and Steve Ayliffe in 1995 showed that it occurs as far upstream as Porthill Bridge in Shrewsbury. It is not recorded in Montgomeryshire, according to the new *Flora* of that county, but the precise upstream limit is not known. In 1979 it was recorded at Loton Park (SJ31), but not apparently in the river, and this record should also be considered unconfirmed.

It seems fair to suggest that *C. acuta* and *C. acutiformis* do not generally grow together, at least in Shropshire. This might help with identification, although it is unwise to take anything for granted. It is worth examining any narrow-leaved clumps of sedge to see how many stigmas there are, and a specimen should be taken of any plant with only two; I would be more than pleased to receive specimens from anyone who found something interesting.

If *Carex acuta* does occur only in the Severn, should that make it a rare plant? The definition of "rare" is that a species should occur in three sites or fewer, but should the river really count as just one site? On the one hand there is the possibility of a single event - a water pollution incident, perhaps, or the proposed restoration of navigation to the river - wiping out the entire population in one go. On the other hand, it might be advisable to determine the size of the total county population of this plant before diluting the concept of a rare species. At the moment, our information is so sketchy it is impossible to say whether there are a few dozen clumps along the river or many hundreds.

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I am particularly grateful to English Nature, West Midlands team, for permission to make use of their records for this account.

The Shropshire Flora Group

The Flora Group is an association of professional and amateur botanists concerned with botany, ecology and conservation in Shropshire. The Group is associated with the Shropshire Wildlife Trust (SWT) and the Botanical Society of the British Isles (BSBI).

Prof. Ian Trueman is the BSBI Vice-county Recorder for Shropshire (VC40): School of Applied Sciences, University of Wolverhampton, Wulfruna Street, Wolverhampton, WV1 1SB. 01902 322162.

Sarah Whild is the Flora Group Coordinator: 66 North Street, Castlefields, Shrewsbury, SY1 2JL. 01743 343789.

Membership is £5 p.a. or £10 for 3 years. Members receive a newsletter twice a year and are invited to attend our training courses, field meetings and an annual indoor meeting each winter. We collect records on the distribution of plants on behalf of the BSBI and are currently working towards the forthcoming *Atlas 2000*. The Flora Group also operates a comprehensive records centre service, available free to members, and we can assist with the identification of difficult plants and the validation of records.

Membership*

Janet Allwood, Ludlow	
Kate Andrew, Ludlow Museum	
Audrey Ashwell, Craven Arms	SO59
N.H.Barnett, Shrewsbury	
John Bingham, Kidderminster	SO77
Dr John Box, Ironbridge	
Peter Boyd, Shrewsbury Museum	
Joan Brown, Bridgnorth	SO79
Julie Clarke, Macclesfield	SJ63 & 64
John Clayfield, Hopton Castle	SO37
Dr Eleanor Cohn, University of Wolverhampton	
Freda Cox, Bridgnorth	
Ruth Dawes, Trefonen	SJ22
Margaret Deadman, Trefonen	
Anne Dyer, Westhope College	SO48
Joan Edwards, Maesbury	
Gill Evans, The Environment Agency	
Rosa Ford, Whitchurch	
Audrey Franks, Manchester	SJ63 & 64
Mary Fuller, Aston Munslow	
Peter Gateley, Ormskirk	
Greg Glendell, North Shropshire Countryside Project	
Vivienne Hodges, Shrewsbury	
Dr H. Hughes, Albrighton	
Mary Hignett, Oswestry	
Jean Hooson, Whitchurch	SJ53 & 54
Jane Ing, Weston Lullingfields	SJ32
Mary Johnson, Ashford Carbonel	
Alison Jones, FWAG	
Victoria Jones, Shrewsbury	
Adam Kennerley, Shropshire Hills Countryside Unit	
Dr Sylvia Kingsbury, Wentnor	SO38 & 39
Mark Lawley, Ludlow	
David Lewis, Birmingham	
Louisa Loades, Newport	
Alex Lockton, Shrewsbury	SJ41
Ed Lomas, Shrewsbury	
Diana Long, Bayston Hill	
Gerald Longley, Shrewsbury & Atcham Borough Council	
Bernard Martin, Shrewsbury	
Dr John Mason, Bayston Hill	
Tavia McLean, Newport	SJ71
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Laila O'Donohue, Bayston Hill	
Prof John Packham, Bridgnorth	
Pat Parker, Weston Lullingfields	SJ42 & 43
David Pearman, Dorchester	
Jackie Pedlow, Llynclys	
Dr Franklyn Perring, Peterborough	SJ73
Susan Pinsent, Church Stretton	
Dr Chris Preston, Monks Wood	
Will Prestwood, Cross Houses	SJ50
Liz Price, Newport	
Philip Pope, Abercraf, Powys	
Jan Pursaill, Shropshire Wildlife Trust	
Dr Rachel Thomas, English Heritage	
Elizabeth Roberts, Oswestry	SJ23
Charles Sinker, Shrewsbury	
Rob Stokes, Coton Hill	
Jane Sutton, The Woodland Trust	
Tina Teearu, Shrewsbury	
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John Thompson, Harmer Hill	
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Sue Townsend, Preston Montford Field Centre	
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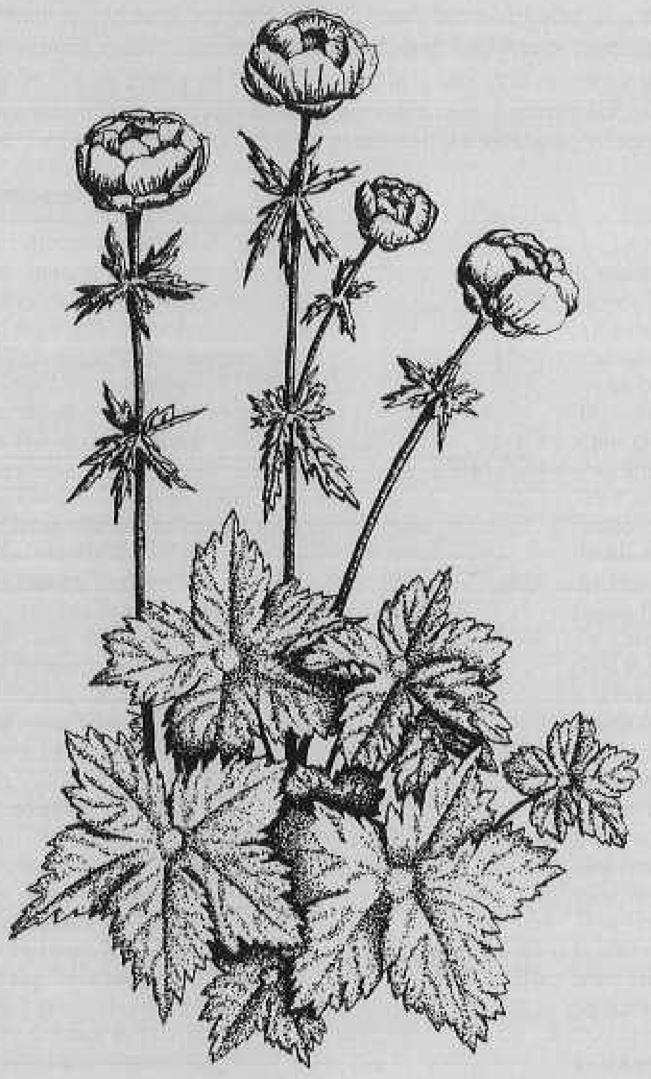
John Tucker, Shropshire Wildlife Trust	
Cathy Turtle, SGS Environment	
Marjorie Wainwright, Oswestry	
Chris Walker, Condover	SJ40
Tom Wall, Lydbury North	
Sarah Whild, Shrewsbury	SJ51
Mary White, Bayston Hill	
Joan Wilkinson, Wistanstow	
Pat Wycherley, Shrewsbury	
Dorothy Young, Clun	

* Some recorders are responsible for 10km squares, or hectads. These are shown in the right-hand column.



Rare Plants of Shropshire, 2nd. edition (1997), by Alex Lockton & Sarah Whild is now available from the Shropshire Flora Group, priced £6.50 + 64p p&p. Published with the support of English Nature.

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